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09/706,937	11/06/2000	Thomas Huber	N0070US	8577

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EXAMINER	
LE, MIRANDA	

ART UNIT	PAPER NUMBER
2169	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/706,937	HUBER ET AL.	
	Examiner	**Art Unit**	
	MIRANDA LE	2169	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 14 October 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 and 8-15 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 and 8-15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/14/08 has been entered.

Claim Objections

Claims 2, 14 are objected to because of the following informalities: “Computer readable medium" should be read as “computer readable storage medium”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations "wherein the k-d tree indexing structure is used to index parcels of geographic data wherein said parcels are collections of said

geographic data that re-present geographic feature encompassed within a bounded area"; and "wherein said third dimension includes rank information that has at least two levels, wherein a first level of rank is associated with a first set of parcels comprising collections of the most important geographic features and a second level of rank is associated with a second set of parcels comprising collections of the geographic features of lesser importance" are not clear. It is not clearly defined in the specification. Since, the meanings of the claimed limitations are not supported by the specification, the meets and bounds of the invention cannot be ascertained.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

According to 35 USC § 101, a patentable process must (1) be tied to a particular apparatus or machine or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. *See In re Bilski,* 2007-1130 (Fed. Cir. 2008) *slip op at* 10-11 ("The Supreme Court, however, has enunciated a definitive test to determine whether a process claim is tailored narrowly enough to encompass only a particular application of a fundamental principle rather than to pre-empt the principle itself. A claimed process is surely patent-eligible under §

101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing").

Independent claim 1 is not tied to a particular apparatus or machine Although the preamble of claim 1 recites a "computer-implemented method", there is no physical changes occur and no computer is claimed; instead, the method comprises of "using a geographic database…; searching said geographic database...," which may be performed without a computer. As such, claim 1 is not tied to a particular apparatus or machine.

In addition, claim 1 does not transform the underlying subject matter (data) into a different state or thing. Thus, claim 1 is directed to a non-statutory process.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and

invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampert et al. (US Patent No. 7,266,560), in view of Soults et al. (US Patent No. 4,873,513).

As per claim 1, Lampert teaches a computer-implemented method of operating a navigation system *(i.e a method for producing a navigable map database which is parcelized into a plurality of parcels, wherein each of the plurality of parcels includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one of the sub-areas, Summary)*, said method comprising:

using a geographic database *(i.e. The data structure 320 is stored in the map database with the kd-tree 322 either in the parcel itself or in an index file, such as in the index file 11 of FIGS. 4 and 5, col. 21, lines 30-46)* containing data that represents geographic features, wherein said database includes an indexing *(i.e. includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one of the sub-areas, Summary)* structure with dimensions *(i.e. Internal K-D Tree Entries, See Fig. 9)*,

wherein a first dimension of said three dimensions includes latitude boundary *(i.e. the plurality of parcels, col. 3, lines 19-30; sub-rectangles, col. 3, lines 45-55)* information *(i.e. Each of these locations 14 has a unique physical location (latitude, longitude, and optionally absolute or relative altitude) and each of the locations 14 can be uniquely identified by its two dimensional (or three dimensional) geographic coordinates, (i.e., latitude, longitude, and optionally altitude). A location 14 may correspond to one of the nodes located at the end of road segment data entity, or may correspond to a point-of-interest, such as a hotel or civic center, or may correspond to a point along a road segment at which the direction of the road changes. The locations 14 may represent anything physically located in the geographic area 12, col. 5, lines 29-45)*,

wherein a second dimension of said three dimensions includes longitude boundary information *(i.e. Each of these locations 14 has a unique physical location (latitude, longitude, and optionally absolute or relative altitude) and each of the locations 14 can be uniquely identified by its two dimensional (or three dimensional) geographic coordinates, (i.e., latitude, longitude, and optionally altitude). A location 14 may correspond to one of the nodes located at the end of road segment data entity, or may correspond to a point-of-interest, such as a hotel or civic center, or may correspond to a point along a road segment at which the direction of the road changes. The locations 14 may represent anything physically located in the geographic area 12, col. 5, lines 29-45)*,

wherein said latitude boundary information and said longitude boundary information define a bounded area represented by a maximum latitude *(i.e. the*

east-west line through the maximum latitude (corresponding to northernmost node encompassed in the geographic region), and the north-south line through the maximum longitude, col. 11, lines 30-48), a maximum longitude *(i.e. minimum bounding rectangle, col. 11, lines 30-48)*, a minimum latitude *(i.e. the east-west line through the maximum latitude (corresponding to northernmost node encompassed in the geographic region), and the north-south line through the maximum longitude, col. 11, lines 30-48)* and a minimum longitude *(i.e. minimum bounding rectangle, col. 11, lines 30-48)*,

wherein in a third dimension of said three dimensions includes rank information *(i.e. data entities, such as road segment data entities, are provided with a "rank.", ...For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2, R3, and R4, each with a different level of detail, col. 7, lines 30-46)*, wherein each of said geographic features have an associated rank information, wherein said rank information has at least two levels *(See Figs. 5, 8)*, a first level of rank is associated with the most important geographic features and a second level of rank is associated with geographic features of lesser importance *(i.e. To implement layering, data entities, such as road segment data entities, are provided with a "rank." The rank of a road segment may be related to its functional class with road segments having a rank of "0" being slowest and narrowest, road segments having a rank of "1" being larger and faster, road segments having a rank of "2" being major roads, and so on. The "rank" of a segment data entity also specifies the highest data layer in which a road segment*

entity exists. For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2, R3, and R4, each with a different level of detail, which can be used by the route calculation function. Similarly, the cartographic subset type of geographic data 6 may include five separate collections of the data, C0, C1, C2, C3, and C4, each with a different level of detail, which can be used by the map display function, col. 7, lines 30-46),

searching said geographic database for data representing a geographic feature using a latitude values, a longitude value and a rank value, wherein said search uses said first and second dimensions of said indexing structure to identify the bounded area *(i.e. the plurality of parcels, col. 3, lines 19-30; sub-rectangles, col. 3, lines 45-55)* in which the latitude value and longitude value falls within *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11),*

wherein said search uses said third dimension of said indexing structure to identify said level of rank corresponding to said rank value *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the*

need arises to allow these layers to work together. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11).

Although "minimum latitude and minimum longitude" are inherently taught in the teaching of Lampert *(minimum bounding rectangle, col. 11, lines 30-48),*

Soults fairly teaches this limitation *(i.e. Each map index data entry in the map portion index file 401 pertains to a different physical map and identifies the parameters under which map portion images have been generated from the corresponding physical map. For example, the map 1 index data 403 includes entries identifying for physical map 1 the minimum field of view in, for example, seconds of longitude, for a block of map portion image frames generated from physical map 1, the maximum field of view in seconds of longitude for a block of map portion image frames generated from physical map 1, the maximum and minimum longitude displayed by map portion images generated from the physical map, and the minimum and maximum latitude displayed by map portion images generated from physical map 1. This data enables a determination to be made whether or not a map portion image frame is stored in the optical disk storage unit 101 that fulfills the requirements of a map portion image display request entered through the input device 105 or generated as a system request by the processor 107, col. 8, lines 37-56).*

It would have been obvious to one of ordinary skill of the art having the teaching of Lampert and Soults at the time the invention was made to modify the system of Lampert to include the limitations as taught by Soults. One of ordinary

skill in the art would be motivated to make this combination in order to select and display an image of a map which encompasses a desired latitude and longitude and with a field of view closest to a selected filed of view in view of Soults (col. 2, lines 45-54), as doing so would give the added benefit of an automated map display system capable of interrelating images of map portions on the basis of the latitude and longitude coverage associated with each map portion as taught by Soults (col. 2, lines 45-54).

As per claim 2, Lampert teaches a computer-implemented index stored on a computer readable medium for a geographic database containing geographic data that represent geographic features *(i.e. there is provided a method for producing a navigable map database which is parcelized into a plurality of parcels, wherein each of the plurality of parcels includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one of the sub-areas, Summary)*, said index comprising:

a single index structure that includes two spatial dimensions and a non-spatial third dimension *(i.e. includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one of the sub-areas, Summary)*, wherein said two spatial dimensions define a bounded area represented by a maximum latitude, a maximum longitude

(i.e. the east-west line through the maximum latitude (corresponding to northernmost node encompassed in the geographic region), and the north-south line through the maximum longitude, col. 11, lines 30-48), a minimum latitude and a minimum longitude *(i.e. minimum bounding rectangle, col. 11, lines 30-48)*,

wherein said structure is a k-d-tree *(See Figs. 5, 8)* index structure comprising a root node, intermediate nodes and leaf nodes *(i.e. The data structure 320 is stored in the map database with the kd-tree 322 either in the parcel itself or in an index file, such as in the index file 11 of FIGS. 4 and 5, col. 21, lines 30-46)*,

said geographic data indexed by said structure are searchable spatially using computer-executable instructions and said two spatial dimensions of said index structure and a latitude and a longitude *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11)*,

said geographic data indexed by said structure are searchable *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. Index files 11*

which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11) for a non-spatial property of the indexed geographic data that represent the geographic using computer-executable instructions and said third dimension of said index structure *(See Fig. 5)*,

wherein said non-spatial property *(See Figs. 5, 8)* of the geographic data includes at least one of: a rank associated with the geographic features represented by the geographic data, a granularity of said indexed geographic data, and a scale associated with said indexed geographic data *(i.e. To implement layering, data entities, such as road segment data entities, are provided with a "rank." The rank of a road segment may be related to its functional class with road segments having a rank of "0" being slowest and narrowest, road segments having a rank of "1" being larger and faster, road segments having a rank of "2" being major roads, and so on. The "rank" of a segment data entity also specifies the highest data layer in which a road segment entity exists. For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2, R3, and R4, each with a different level of detail, which can be used by the route calculation function. Similarly, the cartographic subset type of geographic data 6 may include five separate collections of the data, C0, C1, C2, C3, and C4, each with a different level of detail, which can be used by the map display function, col. 7, lines 30-46)*.

Although “minimum latitude and minimum longitude” are inherently taught in the teaching of Lampert *(minimum bounding rectangle, col. 11, lines 30-48),* Soults teaches this limitation *(i.e. Each map index data entry in the map portion index file 401 pertains to a different physical map and identifies the parameters under which map portion images have been generated from the corresponding physical map. For example, the map 1 index data 403 includes entries identifying for physical map 1 the minimum field of view in, for example, seconds of longitude, for a block of map portion image frames generated from physical map 1, the maximum field of view in seconds of longitude for a block of map portion image frames generated from physical map 1, the maximum and minimum longitude displayed by map portion images generated from the physical map, and the minimum and maximum latitude displayed by map portion images generated from physical map 1. This data enables a determination to be made whether or not a map portion image frame is stored in the optical disk storage unit 101 that fulfills the requirements of a map portion image display request entered through the input device 105 or generated as a system request by the processor 107, col. 8, lines 37-56).*

It would have been obvious to one of ordinary skill of the art having the teaching of Lampert and Soults at the time the invention was made to modify the system of Lampert to include the limitations as taught by Soults. One of ordinary skill in the art would be motivated to make this combination in order to select and display an image of a map which encompasses a desired latitude and longitude and with a field of view closest to a selected filed of view in view of Soults (col. 2,

lines 45-54), as doing so would give the added benefit of providing an automated map display system capable of interrelating images of map portions on the basis of the latitude and longitude coverage associated with each map portion as taught by Soults (col. 2, lines 45-54).

As per claim 14, Lampert teaches a computer-implemented index *(i.e. there is provided a method for producing a navigable map database which is parcelized into a plurality of parcels, wherein each of the plurality of parcels includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one of the sub-areas, Summary)* on a computer readable medium comprising:

a single k-d tree *(See Figs. 5, 8)* indexing structure *(i.e. Internal K-D Tree Entries, See Fig. 9)* that includes a first dimension, a second dimension and third dimension *(i.e. Each of these locations 14 has a unique physical location (latitude, longitude, and optionally absolute or relative altitude) and each of the locations 14 can be uniquely identified by its two dimensional (or three dimensional) geographic coordinates, (i.e., latitude, longitude, and optionally altitude). A location 14 may correspond to one of the nodes located at the end of road segment data entity, or may correspond to a point-of-interest, such as a hotel or civic center, or may correspond to a point along a road segment at which the direction of the road changes. The locations 14 may represent anything physically located in the geographic area 12, col. 5, lines 29-45)*,

wherein the k-d tree *(See Figs. 5, 8)* indexing structure that includes a first dimension, a second dimension *(i.e. Each of these locations 14 has a unique physical location (latitude, longitude, and optionally absolute or relative altitude) and each of the locations 14 can be uniquely identified by its two dimensional (or three dimensional) geographic coordinates, (i.e., latitude, longitude, and optionally altitude). A location 14 may correspond to one of the nodes located at the end of road segment data entity, or may correspond to a point-of-interest, such as a hotel or civic center, or may correspond to a point along a road segment at which the direction of the road changes. The locations 14 may represent anything physically located in the geographic area 12, col. 5, lines 29-45)* and a third dimension *(i.e. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11)*,

wherein the k-d tree *(See Figs. 5, 8)* indexing structure *(i.e. The data structure 320 is stored in the map database with the kd-tree 322 either in the parcel itself or in an index file, such as in the index file 11 of FIGS. 4 and 5, col. 21, lines 30-46)* is used to index parcels of geographic data *(i.e. wherein each of the plurality of parcels includes a first index that associates the area represented by the data in the parcel with a plurality of sub-areas formed of the area and a second index that associates each of the data in the parcel with at least one, of the sub-areas, col. 3, lines 19-30)*, wherein said parcels are collections of said geographic data that represent geographic features encompassed within a bounded area *(i.e. FIG. 6 shows the map of a geographic region illustrating*

application of a parcelization method to geographic data. FIG. 7 shows a map of a portion of a geographic area with divisions into sub-rectangles illustrating application of an embodiment that organizes geographic data within a parcel. FIG. 8 graphically illustrates a kd-tree structure used to represent the separation of geographic data within a parcel using the divisions shown in FIG. 7. FIG. 9 illustrates the kd-tree structure of FIG. 8 stored as data in the map database, col. 3, lines 45-55);

wherein said first dimension includes latitude boundary information of said bounded area, wherein said second dimension includes longitude boundary information of said bounded area *(i.e. Each of these locations 14 has a unique physical location (latitude, longitude, and optionally absolute or relative altitude) and each of the locations 14 can be uniquely identified by its two dimensional (or three dimensional) geographic coordinates, (i.e., latitude, longitude, and optionally altitude). A location 14 may correspond to one of the nodes located at the end of road segment data entity, or may correspond to a point-of-interest, such as a hotel or civic center, or may correspond to a point along a road segment at which the direction of the road changes. The locations 14 may represent anything physically located in the geographic area 12, col. 5, lines 29-45)*, wherein said latitude boundary information and said longitude boundary information define said bounded area represented by a maximum latitude, a maximum longitude *(i.e. the east-west line through the maximum latitude (corresponding to northernmost node encompassed in the geographic region), and the north-south line through the maximum longitude, col. 11, lines 30-48)*, a

minimum latitude and minimum longitude *(i.e. minimum bounding rectangle, col. 11, lines 30-48)*, said parcels of geographic data indexed by said structure are searchable using computer-executable instructions and a latitude value, a longitude value and said first and second dimension of said indexing structure *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11)*,

wherein said third dimension includes rank information *(i.e. data entities, such as road segment data entities, are provided with a "rank.", ...For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2, R3, and R4, each with a different level of detail, col. 7, lines 30-46)* that has at least two levels *(i.e. To implement layering, data entities, such as road segment data entities, are provided with a "rank." The rank of a road segment may be related to its functional class with road segments having a rank of "0" being slowest and narrowest, road segments having a rank of "1" being larger and faster, road segments having a rank of "2" being major roads, and so on. The "rank" of a segment data entity also specifies the highest data layer in which a road segment entity exists. For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2,*

R3, and R4, each with a different level of detail, which can be used by the route calculation function. Similarly, the cartographic subset type of geographic data 6 may include five separate collections of the data, C0, C1, C2, C3, and C4, each with a different level of detail, which can be used by the map display function, col. 7, lines 30-46), wherein a first level of rank is associated with a first set of parcels *(i.e. the plurality of parcels, col. 3, lines 19-30)* comprising collections of the most important geographic features and a second level of rank is associated with a second set of parcels *(i.e. sub-rectangles, col. 3, lines 45-55)* comprising collections of the geographic features lesser importance, said data indexed by said indexing structure *(i.e. Although the organization of some of the data into layers results in some duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. Index files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11)* is searchable for said rank using computer-executable instruction and said third dimension of said indexing structure *(See Figs. 5, 8)*.

Although “minimum latitude and minimum longitude” are inherently in the teaching of Lampert *(minimum bounding rectangle, col. 11, lines 30-48),* Soults teaches this limitation *(i.e. Each map index data entry in the map portion index file 401 pertains to a different physical map and identifies the parameters under which map portion images have been generated from the corresponding physical map. For example, the map 1 index data 403 includes entries identifying for*

physical map 1 the minimum field of view in, for example, seconds of longitude, for a block of map portion image frames generated from physical map 1, the maximum field of view in seconds of longitude for a block of map portion image frames generated from physical map 1, the maximum and minimum longitude displayed by map portion images generated from the physical map, and the minimum and maximum latitude displayed by map portion images generated from physical map 1. This data enables a determination to be made whether or not a map portion image frame is stored in the optical disk storage unit 101 that fulfills the requirements of a map portion image display request entered through the input device 105 or generated as a system request by the processor 107, col. 8, lines 37-56).

It would have been obvious to one of ordinary skill of the art having the teaching of Lampert and Soults at the time the invention was made to modify the system of Lampert to include the limitations as taught by Soults. One of ordinary skill in the art would be motivated to make this combination in order to select and display an image of a map which encompasses a desired latitude and longitude and with a field of view closest to a selected filed of view in view of Soults (col. 2, lines 45-54), as doing so would give the added benefit of providing an automated map display system capable of interrelating images of map portions on the basis of the latitude and longitude coverage associated with each map portion as taught by Soults (col. 2, lines 45-54).

As per claim 3, Lampert teaches the method of Claim 1, wherein said structure is a k-d-tree index structure comprising a root node, intermediate nodes and leaf nodes, wherein each node is a part of a parent-child relationship wherein each parent node includes control information from which one of at least two child nodes associated with the parent node are distinguishable based on search key *(See Figs. 5, 8)*.

As to claims 6, 10, Lampert teaches said geographic features are roads *(i.e. FIG. 3 is an illustration of a single road segment shown in the map of FIG. 2, col. 3, lines 36-37)*.

As to claims 5, 11, Lampert teaches said index is non-homogeneous *(See Figs. 5, 9).*

As to claims 4, 12, Lampert teaches said index is homogeneous *(See Figs. 5, 9).*

As per claim 13, Lampert teaches the invention of Claim 14 wherein said k-d tree structure includes a root node *(See Fig. 8)*, intermediate nodes and leaf nodes , wherein each node part of a parent-child relationship wherein each parent node includes control information from which one of at least two child nodes associated with the parent node are distinguishable based on a search key *(i.e. Although the organization of some of the data into layers results in some*

duplication of the data, the increased efficiency provided by layering generally offsets any disadvantages. As with the use of separate types of data mentioned above, the need arises to allow these layers to work together. ***Index*** *files 11 which include cross references, search trees, or other finding techniques, may be provided for this purpose, col. 8, lines 4-11).*

As per claim 15, Lampert teaches the method index of Claim 1 wherein said data that represent geographic features are organized into layers based on said rank associated with the represented features *(i.e. To implement layering, data entities, such as road segment data entities, are provided with a "rank." The rank of a road segment may be related to its functional class with road segments having a rank of "0" being slowest and narrowest, road segments having a rank of "1" being larger and faster, road segments having a rank of "2" being major roads, and so on. The "rank" of a segment data entity also specifies the highest data layer in which a road segment entity exists. For example, referring to FIG. 5, the route calculation subset type of geographic data 6 may include five separate collections of the data, R0, R1, R2, R3, and R4, each with a different level of detail, which can be used by the route calculation function. Similarly, the cartographic subset type of geographic data 6 may include five separate collections of the data, C0, C1, C2, C3, and C4, each with a different level of detail, which can be used by the map display function, col. 7, lines 30-46).*

Claims 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lampert et al. (US Patent No. 7,266,560), in view of Soults et al. (US Patent No. 4,873,513), and further in view of Israni et al. (US Patent No. 6,308,177).

As to claims 8, 9, Lampert teaches said rank includes integers.

Lampert, Soults do not specifically teach fractional value.

Israni teaches this limitation *(i.e. In alternative embodiments, other-than-degree values can be chosen as units to represent dimensions, and measurement units can be chosen that include fractions, col. 12, lines 44-54)*.

It would have been obvious to one of ordinary skill of the art having the teaching of Lampert, Soults and Israni at the time the invention was made to modify the system of Lampert, Soults to include the limitations as taught by Israni. One of ordinary skill in the art would be motivated to make this combination in order to have higher layers of a data type contain less detail than lower layers in view of Israni, as doing so would give the added benefit of achieving a map display function having its subset of the geographic data organized to facilitate rapid panning and zooming as taught by Israni (col. 9, lines 51-65).

Response to Arguments

With respect to claims 1-6, 8-15, Applicants' arguments have been fully considered; however, upon further consideration, a new ground(s) of rejection is made in view of newly found prior arts.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (571) 272-4112. The examiner can normally be reached on Monday through Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James K. Trujillo, can be reached at (571) 272-3677. The fax number to this Art Unit is (571)-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Miranda Le/
Primary Examiner, Art Unit 2169